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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,636	08/04/2003	Darrell Rinerson	UNTYP020	7199
42958	7590	11/22/2004	EXAMINER	
UNITY SEMICONDUCTOR CORPORATION 250 NORTH WOLFE ROAD SUNNYVALE, CA 94085			MAI, SON LUU	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/634,636

Applicant(s)

RINERSON ET AL.

Examiner

Son L. Mai

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 38-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,13,21-25 and 35 is/are rejected.
- 7) ☒ Claim(s) 3-12,14-20,26-34,36 and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>01-12-04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The papers filed 09-10-04 have been entered. Accordingly, claims 1-56 are pending in the application. Claims 1-37 are examined on the merits and claims 38-56 are withdrawn from consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

### ***Election/Restrictions***

2. Applicant's election with traverse of group I in the reply filed on 09-10-04 is acknowledged. The traversal is on the ground(s) that the Examiner's example does not indicate a difference in claimed device of group I and the claimed method of group II. This is not found persuasive because the Examiner's example is an indication that there is more than one method of forming a trapped charge memory body of the independent claim 38. Besides, the product as claimed in claims 1-37 does not require the method of making in claims 38-56 for its patentability and vice versa. The requirement is still deemed proper and is therefore made FINAL.

3. This application contains claims 38-56 drawn to an invention nonelected with traverse in Paper filed 09-10-04. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Information Disclosure Statement***

4. The information disclosure statement filed 01-12-04 has been considered.

***Specification***

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In claim 34, "trapped charge memory body includes a p-type region that interfaces with an n-type region" does not have antecedent basis.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 13, 21-25 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Doudin et al. (U.S. Patent 6,657,888).

Regarding claims 1 and 2, Doudin discloses in figures 1, 2 and related text, a trapped charge memory device comprising: a top electrode (T1); a bottom electrode (T2); and a trapped charge memory body (Cr2O3) sandwiched between and in electrical contact with said top electrode and said bottom electrode, defining both a top electrode to trapped charge memory body contact and a bottom electrode to trapped charge memory body contact (See column 7, lines 7-38.)

Regarding claim 13, Doudin also teaches at column 7, the resistance  $R_d$  being a function of trapped charge.

Regarding claims 21 and 22, the traps located in  $\text{Cr}_2\text{O}_3$  region, which is the bulk of the memory body or the interface between at least one electrode and the memory body.

Regarding claims 23-25, the conductivity of the trapped charge memory body is changed as the current across it varies.

Regarding claim 35, the trapped charge memory body of  $\text{Cr}_2\text{O}_3$  is a conductive oxide.

#### ***Allowable Subject Matter***

8. Claims 3-12, 14-20, 26-33, 36-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach the current carrier traps comprising hole traps or are characterized by at least one energy level within a band gap.

#### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ovshinsky (U.S. Patent 3571673), Bulovic (U.S. Patent

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6809955), and Gilton (U.S. Patent 6813176) disclose 2-terminal memory devices having resistance states varying with current flowing through the device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son L. Mai whose telephone number is 571-272-1786.

The examiner can normally be reached on 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

11-17-04



Son L. Mai  
Primary Examiner  
Art Unit 2818